

The Development of Environmental Proxies from the Sediment Record Within the Back Reef of the Mesoamerican Reef to Assess the Anthropogenic Impact on Ecosystem Health Due to Anthropogenic Impacts

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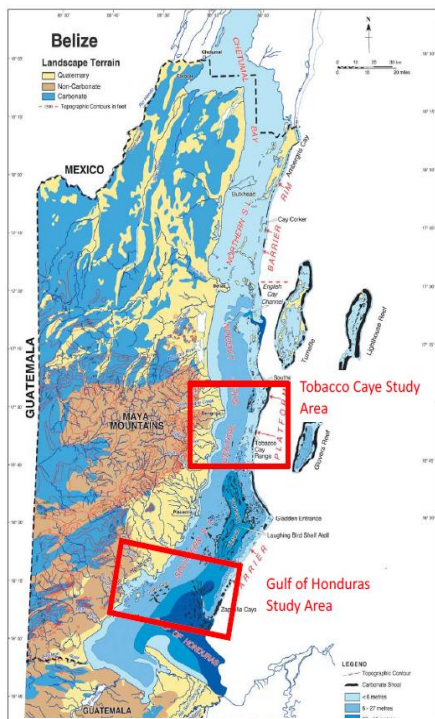


Figure 1: Base map showing the locations of the Tobacco Caye and Gulf of Honduras study sites.

Through the 2019 TAMUG TCRF Mini-Grant program, we received funding to collect reconnaissance scale data in support of developing an NSF Proposal. The project would investigate what role changes in land-use has had on the impact of primary productivity and marine ecosystem health in the back reef of the Mesoamerican Reef. It is along the lagoon shelf of Belize. The Mesoamerican Reef (MAR) is the second largest barrier reef in the world and the largest in the western hemisphere. The reef is located 15-25 km off shore and is separated from the coast by the MAR lagoonal-shelf (Fig. 1). Two different study areas were selected; the Tobacco Caye area is along the central section south of the MAR and is near where Dr. Dellapenna had collected data in 2011 and 2016. The second site selected, within the Port of Honduras because it provided the opportunity to sample both an estuarine setting, as well as, a more remote reef setting.

For all sites, a 2-inch diameter polycarbonate core was collected for archiving and x-radiography. A total of six diver cores were collected. Each core was sectioned into 1 cm thick slices, and each slice was sampled for various analyses. X-radiographs were generated for each core from the polycarbonate core barrel. All cores were collected and field processed. All cores and samples were kept on ice until returning to TAMUG.

Upon return, samples were distributed the project partners (Kaiser, Labonté and Eytan). Initial processing of virus-induced microbial experiments and some experiments were started. All DNA and eDNA the samples are preserved at -80 C until the completion of the analyses.

Future pending analyses: ^{210}Pb geochronology of cores to determine sedimentation rates; Grain size distribution analyses and %carbonate change; Nutrients and carbon analyses